IN THE CLAIMS

- (original) An isolated nucleic acid sequence which encodes a polypeptide with desaturase activity, selected from the following group:
- a) a nucleic acid sequence with the sequence shown in SEQ ID NO: 1,
- b) nucleic acid sequences which, as a result of the degeneracy of the genetic code, are derived from the nucleic acid sequence shown in SEQ ID NO: 1,
- c) derivatives of the nucleic acid sequence shown in SEQ ID NO: 1 which encode polypeptides with the amino acid sequences shown in SEQ ID NO: 2 and which have at least 75% homology at amino acid level without substantially reducing the enzymatic activity of the polypeptides.
- 2. (currently amended) An amino acid sequence A protein encoded by a nucleic acid sequence as claimed in claim 1.
- (currently amended) An amino acid sequence A protein as claimed in claim 2, encoded by the sequence shown in SEQ ID NO: 1.
- (original) A nucleic acid construct comprising a nucleic acid sequence as claimed in claim 1, where the nucleic acid sequence is linked to one or more regulatory signals.
- (previously presented) A vector comprising a nucleic acid sequence as claimed in claim 1 or a nucleic acid construct comprising said nucleic acid sequence linked to one or more regulatory signals.
- 6. (previously presented) An organism comprising at least one nucleic acid sequence as claimed in claim 1 or at least one nucleic acid construct comprising said nucleic

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- 7. (original) An organism as claimed in claim 6, which is a plant, a microorganism or an animal.
- 8. (previously presented) A transgenic plant comprising a functional or nonfunctional nucleic acid sequence as claimed in claim 1 or a functional or nonfunctional nucleic acid construct comprising said nucleic acid linked to one or more regulatory signals.
- 9. (previously presented) A process for the preparation of unsaturated fatty acids, which comprises introducing at least one nucleic acid sequence as claimed in claim 1 or at least one nucleic acid construct comprising said nucleic acid linked to one or more regulatory signals into an oil-producing organism, growing this organism, isolating the oil contained in the organism and liberating the fatty acids contained in the oil.
- 10. (previously presented) A process for the preparation of triglycerides with an increased content of unsaturated fatty acids, which comprises introducing at least one nucleic acid sequence as claimed in claim 1 or at least one nucleic acid construct comprising said nucleic acid linked to one or more regulatory signals into an oil-producing organism, growing this organism and isolating the oil contained in the organism.
- 11. (previously presented) A process for the preparation of saturated fatty acids, which comprises introducing at least one nonfunctional nucleic acid sequence as claimed in claim 1 or at least one nonfunctional nucleic acid construct comprising.

said nucleic acid linked to one or more regulatory signals into an oil-producing organism, growing this organism, isolating the oil contained in the organism and liberating the fatty acids contained in the oil.

- 12. (previously presented) A process for the preparation of triglycerides with an increased content of saturated fatty acids, which comprises introducing at least one nonfunctional nucleic acid sequence as claimed in claim 1 or at least one nonfunctional nucleic acid construct comprising said nucleic acid linked to one or more regulatory signals into an oil-producing organism, growing this organism and isolating the oil contained in the organism.
- 13. (previously presented) A process as claimed in claim 9, wherein the unsaturated fatty acids have an increased calendulic acid content.
- 14. (previously presented) A method as claimed in claim 9, wherein the organism is a plant or a microorganism.
- 15. (original) An unsaturated fatty acid prepared by a process as claimed in claim 9.
- 16. (original) A triglyceride with an increased content of unsaturated fatty acids prepared by a process as claimed in claim 10.
- 17. (original) A saturated fatty acid prepared by a process as claimed in claim 11.
- 18. (original) A triglyceride with an increased content of saturated fatty acids prepared by a process as claimed in claim 12.
- 19. (previously presented) A method for isolating a genomic sequence comprising homology screening with the nucleic acid sequence as claimed in claim 1 or a fragment thereof.

20. (original) An enzyme which converts a fatty acid of the structure I,

$$R^2$$
 CH_2 $COOR^1$ (I)

which has two double bonds separated from each other by a methylene group, to give a triunsaturated fatty acid of the structure II,

$$R^2$$
 CH_2 $COOR^1$ (II),

the three double bonds of the fatty acid being conjugated and the substituents and variables in the compounds of the structures I and II having the following meanings:

 R^1 = hydrogen, substituted or unsubstituted, unsaturated or saturated, branched or unbranched C_1 – C_{10} –alkyl–,

 R^2 = substituted or unsubstituted, unsaturated or saturated C_1-C_9 -Alkyl-

 R^3 and R^4 independently of one another are hydrogen, substituted or unsubstituted, saturated or unsaturated, branched or unbranched C_1-C_{22} -alkylcarbonyl or phospho-, n = 1 to 14.